(19)The Korean Intellectual Property Office (KR)
Registered Patent (B1)

(51) Int.Cl. 6
A61K 7/00

Examined Publication Date	2004-10-08
Registration No	10-0452165
Registration Date	2004-10-01
Application No	10-2002-0005090
Application Date	2002-01-29
Publication No	10-2003-0064986
Publication Date	2003-08-06
Agent	

Inventor	Ji-Eun Park
	Byeong-Yeong Gang
	Jin-Han Kim
	Eun-Yeong Lee
	Jong-Won Shim
	Han-Gon Kim
	Sang-Hun Han
	Hak-Hui Gang
	I-Seop Jang
Right Holder	Ji-Eun Park
	Byeong-Yeong Gang
	Jin-Han Kim
	Eun-Yeong Lee
	Jong-Won Shim
	Han-Gon Kim
	Sang-Hun Han
	Hak-Hui Gang
	I-Seop Jang
Examiner	Jin-Uk Jeong

Title of Invention	Cosmetic composition containing the nanoemulsion using the lipopeptide aid interface activitor and this.

Abstract

The invention relates to the cosmetic composition containing the nanoemulsion using the lipopeptide aid interface activitor and this. And more specifically, by phospholipid, especially, the lecithin being used as the main part surfactant and using the lipopeptide system anionic surfactant as cosurfactant, it is inside particle about one or more oils or the cosmetic composition containing the nanoemulsion in which the particle diameter is 10~100nm containing the physiological activity available component and this.

Keyword(s)

Phospholipid * lecithin * lipopeptide * cosurfactant * nanoemulsion * surfactine * cosmetic material.

Description

※ Details of the invention

▩ Purpose of the Invention

▪ The Technical Field to which the invention belongs and the Prior Art in that Field

The invention relates to the cosmetic composition containing the nanoemulsion using the lipopeptide aid interface activitor and this. And more specifically, by phospholipid, especially, the lecithin being used as the main part surfactant and using the lipopeptide system anionic surfactant as cosurfactant, it is inside particle about one or more oils or the cosmetic composition containing the nanoemulsion in which the particle diameter is 10~100nm containing the physiological activity available component and this.

Nanoemulsion the oil in water emulsion. And the particle size of emulsion usually 10~100nm. In the nanoemulsion in which the particle size is 100nm or less, particles a little bit receives the influence of the gravity in comparision with the macroemulsion in which the size is 1㎛ or greater. Due to this, the creaming phenomenon or the settling phenomenon in which exercise between the emulsification particle follows the Brownian motion of the spreading movement putting first and going mad influence on the stability of the general macroemulsion especially does not appear. But destabilizing appears with the Ostwald ripening happening to the solubility gap by the diversification of the coherence (coalescence) by the interaction of particle and between the particle or the particle size.

Nanoemulsions (US5,753,241 A), using the phosphoric acid fatty ester as the method for manufacturing nanoemulsion the nanoemulsion (european Patent first 010 416 A1), using the glycerol fatty ester the ethylene oxide and the nanoemulsion ((A) 99-57227 A), using the propyleneoxide block polymer the nanoemulsion (european Patent first 016 453 A) using the ethoxylated fatty ether or the ethoxylated fatty ester, and the nanoemulsion (european Patent first 010 413 A1) using the sucrose ester or the sucrose ether were known as. The method for adding the organic solvent, mainly known as as the transdermal absorption promoter surfactant or the lower fatty acid etc. had. Kind and content of the organic solvent could apply to the cosmetic material and drug external use medicine were regulated. The most of organic solvents, in which moreover, the transdermal absorption promotion effect had surfactant, the lower fatty acid etc. had been becoming an issue in that the case of causing the skin irritation by breaking the structure of the keratin layer, manied.

On the other hand, there can be the disadvantage it multiplies the mobility of the horny layer lipid and it multiplies the skin absorption rate of drug or the active ingredient [Journal of Controlled Release, 58(1999):207-214] and the skin irritation makes a note and the nanoemulsion which it manufactures by using is sportlighted as the transdermal absorption system [PSIT Vol.3, No.12(2000):417-425], and but of difficulting to independently keep the long term stability of nanoemulsion phospholipid as phospholipid, especially, surfactant the lecithin.

If using the anionic surfactant as the cosurfactant (co-surfactant) in order to improve the stability of the nanoemulsion solving this problem and is composed of phospholipid, the electrostatic repulsive force (electrostatic repulsion) by the negative charge formed in the interfacial layer is induced, the coherence between particle or the Ostwald ripening phenomenon can be prevented with the electrical repulsion between the nano particle. There is a problem that the sodium dodecyl sulfate (Sodium Dodecyl Sulfate, SDS) and sodium laureth sulfate (Sodium Laureth Sulfate, SLES) have to the representative anionic surfactant. These eliminates the epidermal lipid or the intercellular lipid about the skin. In addition, protein is degenerated and toxicity is shuddered on cell. Particularly, it can unite through the keratin occupying the most of corneum and hydrophobic interaction or the ionic interaction. The denaturation of protein is induced with the electrostatic repulsive force between the polarity part of the surfactant uniting with the keratin chain. It is in conclusion known as [J. Soc. Cosmet. Chem., 48(1997):253 -274] to bring about the skin irritation such as the erythema and edema by giving influence to the skin action in which such change is composite.

In this way, there can be the disadvantage the cosurfactant the excitation severed in the skin and bring about the side effect in order to manufacture the nanoemulsion containing phospholipid could not help being excess used, and the use feeling stickying due to this appears in the skin in coating, or that the skin irritation is caused as the conventional technology.

※ The Technical Challenges of the Invention

Thus, in order that the stability of skin excellented when these inventors spreading nanoemulsion in the skin, the transdermal absorption promotion effect manufactured the excellent nanoemulsion particle, by it physical chemicaled of the nanoemulsion which it manufactured by using the phospholipid, in which the effect that the skin irritation made a note and improving the mobility of the sclerite layer had especially, the lecithin, improving stability, while the skin relevance index highed, the lipopeptide system anionic surfactant without the magnetic pole about the skin, and the surfactine of the ring structure of being more specifically manufactured from the Bacillus subtilis being added within formulation to the cosurfactant (co-surfactant) and the electrostatic repulsive force between the nanoemulsion particle being multiplied and smalling particle it physical chemicaled of nanoemulsion, stability was improved. In addition, it discovered to could manufacture the nanoemulsion which minimized the side effect in skin even when the transdermal absorption promotion excellented and the invention was completed.

Therefore, an object of the present invention is to provide the nanoemulsion in which the transdermal absorption promotion effect excellents and it physical chemicals, by stabilizing by using the anionic cosurfactant of the lipopeptide system, and the surfactine which more specifically becomes from the Bacillus subtilis of the circularity in the nanoemulsion which it manufactures by using phospholipid, especially, the lecithin as the main part surfactant, stability excels and the magnetic pole about the skin is minimized and a method of manufacture thereof.

The purpose of anothering of the present invention provides the cosmetic composition containing the nanoemulsion manufactured as described above.

※ Structure & Operation of the Invention

The invention relates to phospholipid, especially, the main part surfactant the lecithin. And it characterizes to manufacture the nanoemulsion which collects one or more oils or the physiological activity available component

inside the nanoemulsion particle by using and using the anionic surfactant of the lipopeptide system as cosurfactant.

Preferably the particle of the nanoemulsion offered to the invention the diameter is 30~60㎚ with 10~100㎚. And the formulation of the semi-transparent oil-in-water.

In the invention, the phospholipid, used as the main part surfactant especially, the lecithin physical chemicals, the limit which is special as to the property has no. And it buys from on the market and it can use. Generally, the lecithin can buy the lecithin extracted from plant, especially, the Glycine max or egg or the phospholipid, which it more refines having the fatty acid chain in which the carbon number is 12~24 in other words, the phosphatidylcholine, the phosphatidyl ethanolamine, phosphatidylcholine, the phosphatidyl glycerol, phosphatidylinositol, the other fatty acid and their mixture. And the hydrogenated saturated lecithin which in some cases eliminates the unsaturated double bond of the fatty acid chain with hydrogenation can be used. Moreover, the refinement phospholipid enhancing the content of the specific component can be used as phospholipid among phospholipid.

The nanoemulsion offered to the invention contain the physiological activity available component or one or more oils inside particle. The limit special except that the physiological activity available component which is sampled inside the nano particle of the present invention and is used the utility component has no. And in the kind and content, adjustment in some cases possible with purpose. This physiological activity available component, for example, this physiological activity available component, for example, the danazol, haloperidol, furosemid, the isosorbide dinitrate, chloramphenicol (chloramfenicol), the acetylsalicylic acid, the codeine phosphate, the chlorpromazine hydrochloric acid (chlorpromazine HCl), the amitriptyline hydrochloric acid (zmitriptyline HCl), the verapamil hydrochloric acid (verapamil HCl), sulfamethoxazole, the caffeine, cimetidine (cimethidine), the sodium diclofenac (diclofenac Na), the coenzyme Q 10 (Coenzyme Q10), vitamin E and their derivative, the vitamin A and their derivative, and the provitamin D 3 and their derivative, the ursolic acid, the rosmarinic acid, 18- beta glycyrrhizic acid (18beta-glycyrrhetinic acid), glabridin, the aleuritic acid, polyphenol, esculin, epigallocatechingallate ((-) epigallocatechin gallate), the turmeric acid, ginsenoside (ginsenosides), the tetra hydrocurcuminoids, the Centella asiatica, the beta-carotene (beta carotene). The arty nose side (asiaticoside), farnesol, beta -sitosterol (beta-sitosterol), the linoleic acid, the gamma linolenic acid, resveratrol, vineatrol, the Ginkgo biloba, triclosan, natural essential oil, ceramide, sphingosine etc has.

It selects in the oil, extracted from the animal or plant the mineral oil, and the synthetic oil, the silicon oil and their mixture and the oil used in the invention can use.

In the invention, the lipopeptide system anionic surfactant, and the sodium salt form of the surfactine of the ring structure of being more preferably produced from the Bacillus subtilis are used as the cosurfactant for supporting the emulsifying capacity of phospholipid for the stabilization of nanoemulsion and adjustment of nanosize. As the biosurfactants which surfactine is produced from the microorganism (the Bacillus subtilis: Bacillus subtilis) with the fermentation processing, it is known as that the anti-coagulation function, the anticancer activity, the cholesterol lowering activity, the phosphodiesterase inhibition action and antifungal action have. It buys to be generally sold in on the market and it can use. Structure of the surfactine used of the invention is same as those of the following chemical formula 1.

The general structural formula of the invention surfactine is C.53H93N7O13This. The exact mass (exact mass) analyzed to the mass spectrograph 1035.68 and as to the molecular weight, the carbon number of 1036.36, the alkyl chain 17 to 12. L-Leult can be replaced with the isoleucine or (valine) widening. The surfactine of the present invention includes one among the 12~17 carbon numbers alkyl chain among the peptide of one and ring structure. And it unites with the sodium ion 1.5 mole and this surfactine Gram formula weight exists in the form of the salt.

The above-described surfactine can be preferably used about the nanoemulsion total weight 0.005~5 weight% as the concentration of 0.1~1 weight%. Nanoemulsion less than 60nm which can pass through the keratinocyte gap of the keratin layer if surfactine is used as the proper concentration can be manufactured.

It adds sterol and the derivative originating from plant for the interfacial layer strengthening of the oil globule or the nanoemulsion particle and the nanoemulsion of the present invention can use. It can use to be generally used as this sterol and their derivative. And the soybean sterol, the PEG-5 cole seed (rapeseed) sterol or the car roller sterol etc. can be used preferably.

It adds the polyhydric alcohol for the interfacial layer strengthening of the oil globule or the nano particle and the nanoemulsion of the present invention can use. The additive selected from the lower alcohol, generally used as this polyhydric alcohol the glycol, and per can be used. And 2- ethyl -1,3- hexanedio can be added preferably.

It more preferably contain 0.5~8.0 weight% and the phospholipid used in the invention can manufacture about the nanoemulsion total weight 0.1~20 weight%.

According to the physical chemical property of the active ingredient which amount of the surfactant including the phospholipid about amount of the physiological activity available component is used for the present invention or the oil adds or the oil, difference has. But it adds about the amount of the active ingredient or the oil to the mass ratio of 0.1~10 times and it uses. And it more preferably adds to the mass ratio of 0.5~5 times and it can use.

The nanoemulsion offered to the invention preferably more preferably contain the oil phase of 5~20 weight% about the nanoemulsion total weight 2~30 weight%. "amount of the oil phase" implies the total amount of the oil phase compositional component not including surfactant.

After the nanoemulsion offered to the invention ***s the aqueous phase and oil phase at a temperature of 20~70℃ and it mixes, this is homogenized in the pressure of 500~2500bar and it can manufacture.

Since the nanoemulsion offered to the invention uses the phospholipid, in which the skin irritation firstly makes a note and which multiplies the mobility of the keratin layer and multiplying the permeability of skin of drug or the physiological activity available component especially, the lecithin as the main part surfactant the transdermal absorption effect of the active ingredient very excels. In order that the stability of the phospholipid containing nanoemulsion in which the long term stability drawing of molecule relatively falls is improved to the second, by the anionic surfactant of the lipopeptide system, especially, surfactine being mixed to cosurfactant and manufacturing it physical chemicals of nanoemulsion, stability very excels.

The limit which is special in the formulation of the cosmetic material containing the nanoemulsion offered to the invention has no. But it can use in the skin, the mucous membrane, scalp or hair etc. It can use as for example, the cleansing agent of the color cosmetic composition, shampoo, rinse, body cleanser, dentifrice, the oral cleaner etc, the hair tonic, gel, mousse, including, the hair setting agent, the hair tonic, hair-dye, including, the formulation of the cosmetic composition for hair including the base make-up and lipstick of the flexible toilet water, lotion, cream, pack, gel, patch etc, the makeup base, foundation etc. Moreover, it widely can apply to the drug like the lotion, ointment, gel, cream, patch or the aerosol propellant and non-medical supplies etc.

Hereinafter, the invention coming in the manufacturing example and testing example tries to be explained more specifically. However, the scope of the present invention is not thus limited.

Reference example 1.

In the ordinary service, after the glycine max hydrolecithin 2g, PEG-5 cole seed (rapeseed) sterol 1g, olive oil 15g, 2- ethyl -1,3- hexanedio 4g, alcohol 10g which it easily can buy is mixed and it dissolves in 60℃ the hot, after this is mixed with the in advance heated distilled water 167g and it gentles to the general homogenizer in

3,000~6,000rpm for 3 minutes, it processes recirculation in 1,000bar over 1 time by using the high pressure homogenizer (Microfluidizer).

Manufacturing example 1.

After it mixes with the distilled water 167g in which the glycine max hydrolecithin 2g, PEG-5 rapeseed sterol 1g, olive oil 15g, 2- ethyl -1,3- hexanedio 4g, alcohol 10g is mixed and including the hot in 60℃, and surfactine 0.1 g (aminofect, and the showa denko K K. corp. manufacture) and it gentles to the general homogenizer in 3,000~6,000rpm for 3 minutes, it processes recirculation in 1,000bar over 1 time by using the high pressure homogenizer. Surfactine 0.1 g (aminofect, and the showa denko K K. corp. manufacture) after dissolve, are in advance heated this.

Manufacturing example 2.

After it mixes with the distilled water 167g in which the glycine max hydrolecithin 2g, PEG-5 rapeseed sterol 1g, olive oil 15g, 2- ethyl -1,3- hexanedio 4g, alcohol 10g is mixed and including the hot in 60℃, and the surfactine 0.2g and it gentles to the general homogenizer in 3,000~6,000rpm for 3 minutes, it processes recirculation in 1,000bar over 1 time by using the high pressure homogenizer. The surfactine 0.2g after dissolves, is in advance heated this.

Manufacturing example 3.

After it mixes with the distilled water 167g in which the glycine max hydrolecithin 2g, PEG-5 rapeseed sterol 1g, olive oil 15g, 2- ethyl -1,3- hexanedio 4g, alcohol 10g is mixed and including the hot in 60℃, and the surfactine 1.0g and it gentles to the general homogenizer in 3,000~6,000rpm for 3 minutes, it processes recirculation in 1,000bar over 1 time by using the high pressure homogenizer. The surfactine 1.0g after dissolves, is in advance heated this.

Manufacturing example 4.

After it mixes with the distilled water 155g in which the glycine max hydrolecithin 5g, PEG-5 rapeseed sterol 5g, delta-tocopherol 6g, olive oil 14g, 2- ethyl -1,3- hexanedio 2g, alcohol 10g is mixed and including the hot in 60℃, and the surfactine 0.6g and it gentles to the general homogenizer in 3,000~6,000rpm for 3 minutes, it processes recirculation in 1,000bar over 1 time by using the high pressure homogenizer. The surfactine 0.6g after dissolves, is in advance heated this.

• Comparative Example 1 ~3 • .

After it mixes with the distilled water 167g in which the glycine max hydrolecithin 2g, PEG-5 rapeseed sterol 1g, olive oil 15g, 2- ethyl -1,3- hexanedio 4g, alcohol 10g is mixed and including the hot in 60℃, and the sodium dodecyl sulfate (SDS) 0.1 g (comparative Example 1), 0.2 g (comparative example 2), or 1.0 g (comparative example 3) and it gentles to the general homogenizer in 3,000~6,000rpm for 3 minutes, it processes recirculation in 1,000bar over 1 time by using the high pressure homogenizer. The sodium dodecyl sulfate (SDS) 0.1 g (comparative Example 1), 0.2 g (comparative example 2), or 1.0 g (comparative example 3) after dissolves, is in advance heated this.

• comparative example 4~6 • .

After it mixes with the distilled water 167g in which the glycine max hydrolecithin 2g, PEG-5 rapeseed sterol 1g, olive oil 15g, 2- ethyl -1,3- hexanedio 4g, alcohol 10g is mixed and including the hot in 60℃, and the sodium laureth sulfate (SLES) 0.1 g (comparative example 4), 0.2 g (comparative example 5), or 1.0 g (comparative example 6) and it gentles to the general homogenizer in 3,000~6,000rpm for 3 minutes, it processes recirculation in 1,000bar over 1 time by using the high pressure homogenizer. The sodium laureth

sulfate (SLES) 0.1 g (comparative example 4), 0.2 g (comparative example 5), or 1.0 g (comparative example 6) after dissolves, is in advance heated this.

Testing example 1: the nanoemulsion stability made into surfactine and SDS, and SLES is comparison.

By in order to measure the average particle size of the obtained nanoemulsion in the reference example 1, and the manufacturing example 1~3 and Comparative Example 1 ~6, it dynamiced, using the laser light scattering technique (the dynamic light scattering, instrument model Zetasizer 3000HS, malvern, UK), it measured. And the scattering angle fixed to figure 90. Temperature measured while keeping with figure 25. The hydraulics particle diameter calculated based on the contin method. And the mean size (diameter) of particle made based on the Z- mean value.

The mean size of the nano particle obtained in the reference example 1, and the manufacturing example 1~3 and Comparative Example 1 ~6 (unit: nm)

Reference example 1.	Manufacturing example 1.	Manufacturing example 2.	Manufacturing example 3.	Comparative Example 1.	Comparative example 2.	Comparative example 3.	Comparative example 4.	Comparative example 5.	Comparative example 6.
Average particle size. 152	84	72	51	146	143	130	143	139	121

If the result of the table 1 is at looked, surfactine can know through the little amount to small the size of the nano particle less than 100nm. And it can know to compare to the sodium dodecyl sulfate and sodium laureth sulfate and smaller can make the initial particle size with the same concentration in use. In the reference example 1 and Comparative Example 1, 2 and 4, and 5 is one month storage, it separated while Taking HaeJi than the initial exterior. But the manufacturing example 1, 2, 3 and comparative example 3, and 6 were stable. Therefore, the nanoemulsion with a superior long term stability drawing with the amount it can improve the nanoemulsion stability in case of appropriately using the anionic surfactant, and little in case of using especially, surfactine can be manufactured.

• formulation example 1: the flexible toilet water • containing the invention nanoemulsion.

The prescription of the flexible toilet water containing the nanoemulsion of above statement manufacturing example 4 was shown for the diagram below 2. The content of each component based on weight%.

Ingredients name.	Formulation example 1.	Comparative formulation example 1.
Cetostearylalcohol.	1.0	1.0
Squalene.	7.0	7.0
Polysorbate 60.	1.0	1.0
Sorbitan monostearate.	0.3	0.3
Manufacturing example 4.	10.0	-
Delta-tocopherol.	-	0.3
Glycerine.	3.0	3.0
Triethanolammine.	0.2	0.2
Carboxyvinyl polymer.	0.2	0.2
Antiseptic.	Trace amount.	Trace amount.
Perfume.	Trace amount.	Trace amount.
Distilled water.	to 100	to 100

In the table 2, the formulation example 1 the formulation containing nanoemulsion. And the comparative formulation example 1 adds the delta-tocopherol of equivalent. It is included in the formulation example 1.

Testing example 2: transdermal absorption measurement test.

The percutaneous absorption test was proceed by using the formulation example 1 and comparative formulation example 1. The male hairless guinea pig (strain IAF/HA-hrBP) of 8 weeks GV 10 was used for the percutaneous

absorption test. The skin of the abdomen part of the guinea pig was cut and it equipped to the beep lance type diffusion cell (Frans-type diffusion cells, lab Fine Instruments) and it did an experiment. In the receptor (receptor) container (5㎖) of the beep lance type diffusion cell, 50mM phosphate buffer solutions (pH 7.4, 0.1M NaCl) were in put. The diffusion cell decentralized into 600rpm mixing while keeping 32℃. And by using the formulation example 1 manufactured as described above and comparative formulation example 1, the solution 50㎕ decentralized into the distilled water into 0.3 % (W/V) was put into the doner (dornor) container. It let absorb and diffuse according to the time which it in advance arranged beforehand. And in the area of the skin in which the absorption diffusion occurred, 0.64㎠ was. In after when the absorption diffusion of the active ingredient finishes, the absorbed sulfide remaining on the skin was washed with the ethanol 10㎖. After using the tip type homogeniger (Polytron PT2100, Switzerland), the skin in which the active ingredient was absorbed and diffused was changed, by using the methanol of 4㎖, the delta-tocopherol absorbed into the skin inside was extracted. Thereafter, extract was filtered by using 0.45㎛ nylon membrane filtration membrane. It measured to legally legally HPLC of the condition as follows.

Transdermal absorption measurement result.
Elapsed time.
12 hours. 24 hours.
Formulation example 1. 11.5 30.7
Comparative formulation example 1. 4.9 11.6
[Main part] column:ODS(150mm, 5micron)The moving phase: methanol 100%.Flux: 1㎖ / min.Detection wavelength: 290nm.

It as to the test result described in the above can know that the transdermal absorption effect of the active ingredient excels than the formulation which the formulation containing the nano particle according to the present invention contain does not.

Testing example 3: human patch test.

Past, according to CTFA Guideline (The Cosmetic, Toiletry and Fragrance Association, Inc. Washington, D.C. 20036, 1991) against the healthy female nevers seening the hypersensitivity reaction in the skin irritation of the average age 24.8 force and male 30 people, it enforced like next. Firstly, after it loaded within the surfactine and sodium dodecyl sulfate (SDS), the sodium laureth sulfate (SLES) 1% aqueous solution and manufacturing example 1, 2, and 3 and the chamber (Finn Chamber) which became moldy the Comparative Example 1 ~6 the respective 20㎕, it stuck in the test site fore arm skin. It clinched with the micro tape. Patch spread 24 for hour. And the test site was indicated in after eliminating patch by the Marking pen. Each test site was observed after patch after 1 hour and 24 hours. The galvanic skin response was evaluated like the diagram below 4. The result was shown for the diagram below 5.

Class. Symbol. Simplex criterion.
0 - Nonstimulation (No visible reactions)
1 ± Mild stimulation (Mild erythema)
2 + Strong man pole (Intense erythema)
3 ++ The strong man pole accompanying edema (Intense erythema with edema)
4 +++ The strong man pole accompanying droplet, and edema.(Intense erythema with edema and vesicle)

Testing material. The examinee number in which the reaction appears (life) Average reactivity (n=30) Determination.
After 24 hours. After 48 hours.
± + ++ +++ ± + ++ +++
1% surfactine. 1 0.42 Nonstimulation.
1% SDS 2 5 4 2 4 5 2 30.0 Strong man pole.
1% SLES 10 3 5 8.75 Strong man pole.
Manufacturing example 1. 0.00 Nonstimulation.
Manufacturing example 2. 0.00 Nonstimulation.

Manufacturing example 3.	1							0.42	Nonstimulation.
Comparative Example 1.	2	2		2				3.33	Mild irritant.
Comparative example 2.	3	4		5	1			7.50	Strong man pole.
Comparative example 3.	1	2	4	1	2	4	3	16.7	Strong man pole.
Comparative example 4.	3			1				1.66	Light irritant.
Comparative example 5.	4	1		1				2.92	Light irritant.
Comparative example 6.	6	2		2				5.00	Strong man pole.

[Main part] The average reactivity = ∑ (class × reaction number of respondent) ×100.4 (maximum class) × 30 (whole examinee number) ×2 (total inspection number)Nonstimulus range: average reactivity 1 under.Light irritant range: average reactivity 3 under.Mild irritant range: average reactivity 5 under.Strong man pole range: over the average reactivity 5.

In the surfactine used in the present invention from the table 5, is 1% water phase, it appears as the average reactivity evaluation result 0.42. It smalls than 1 which it generally judges as nonstimulation. Therefore, it safes in the human body. And because of being adjudged in case of the manufacturing example 1, including surfactine 2, and 3 as nonstimulation, the nanoemulsion according to the present invention can in the skin as the safe composition. It can decide that the magnetic pole is seened in the composition, including the other side, and this two materials 1% aqueous solution of the sodium laureth sulfate and sodium dodecyl sulfate was adjudged as the strong man pole giving the severely irritating to the skin moreover, the skin.

Effects of the Invention

In the invention nanoemulsion which it manufactures through the testing example described in the above and comparative example by using the anionic surfactant with a superior stability of skin the lecithin or phospholipid is used as described above as the main part surfactant surfactine as cosurfactant, the particle size smalls less than 100nm and the transdermal absorption effect of the active ingredient about corneum very excels. The magnetic pole about the skin makes a note. And the excellent effect very has the long-term stability of particle excellenting and contain the oil and physiological activity available component of the large amount. Therefore, it very usefully can use in manufacture of the cosmetic composition using this.

Scope of Claims

Claim 1 :

The nanoemulsion which characterizes to pile up one or more oils or the physiological activity available component inside particle by phospholipid being used as the main part surfactant and using the anionic surfactant of the lipopeptide system surfactine as to nanoemulsion as cosurfactant and manufacture.

Claim 2 :

Phospholipid as to the first claim, is the lecithin or the nanoemulsion characterizing the lecithin derivative.

Claim 3 :

The nanoemulsion as to claim 2 the phospholipid having the lecithin or the fatty acid chain in which as to the lecithin derivative, the carbon number is 12~24 to the lecithin extracted from plant, and characterizing to be the thing which selects from the hydrolecithin eliminating the unsaturated double bond of the fatty acid chain with the phosphatidylcholine, phosphatidyl ethanolamine, phosphatidylcholine, phosphatidyl glycerol, phosphatidylinositol or their mixture and hydrogenation more than one kind.

Claim 4 :

Deletion.

Claim 5 :

Sterol as to the manufacture of nanoemulsion as to the first claim, or the nanoemulsion which characterizes to more add the sterol derivation and manufacture.

Claim 6 :
The nanoemulsion which characterizes to add the polyhydric alcohol as to the manufacture of nanoemulsion and manufacture as to the first claim.

Claim 7 :
The nanoemulsion which nanoemulsion characterizes as to the first claim to phospholipid about the nanoemulsion overall weight to 0.1~20 weight%, and manufacture.

Claim 8 :
The nanoemulsion which nanoemulsion characterizes as to the first claim to surfactine about the nanoemulsion total weight to 0.005~5 weight%, and manufacture.

Claim 9 :
The first claim to the cosmetic composition which characterizes to contain nanoemulsion by one claim among the claims 3 and 5 through 8.

Claim 10 :
The manufacturing method of the nanoemulsion which characterizes to add one or more oils or the physiological activity available component by the lecithin or phospholipid being used as the main part surfactant and using the anionic surfactant of the lipopeptide system surfactine as to the manufacturing method of nanoemulsion as cosurfactant and manufacture.

Claim 11 :
The manufacturing method of the nanoemulsion which after the manufacturing method of nanoemulsion ***s the aqueous phase and oil phase at a temperature of 20~70℃ and it mixes as to claim 10, characterizes to homogenize this mixture in the pressure of 500~2500bar and manufacture.